We claim:

1. A composition comprised of nanomagnetic particles, wherein said nanomagnetic particles have an average particle size of less than about 100 nanometers, a saturation magnetization of from about 2 to about 2,000 electromagnetic units per cubic centimeter, a phase transition temperature of from about 40 to about 200 degrees Celsius, and a squareness of from about 0.05 to about 1.0; wherein the average coherence length between adjacent nanomagnetic particles is less than about 100 nanometers; and wherein said nanomagnetic particles are at least triatomic, being comprised of a first distinct atom, a second distinct atom, and a third distinct atom.

2. The composition as recited in claim 1, wherein said first distinct atom is an atom selected from the group consisting of atoms of actinium, americium, berkelium, californium, cerium, chromium, cobalt, curium, dysprosium, einsteinium, erbium, europium, fermium, gadolinium, holmium, iron, lanthanum, lawrencium, lutetium, manganese, mendelevium, nickel, neodymium, neptunium, nobelium, plutonium, praseodymium, promethium, protactinium, samarium, terbium, thorium, thulium, uranium, and ytterbium.

3. The composition as recited in claim 2, wherein said first distinct atom is an atom selected from the group consisting of iron, nickel, and cobalt.

4. The composition as recited in claim 2, wherein said nanomagnetic particles have a squareness of from about 0.1 to about 0.9.

5. The composition as recited in claim 2, wherein said nanomagnetic particles have a squareness of from about 0.2 to about 0.8.

6. The composition as recited in claim 2, wherein said nanomagnetic particles have a squarness of at least about 0.8.

7. The composition as recited in claim 2, wherein said second distinct atom has a relative magnetic permeability of about 1.0.

8. The composition as recited in claim 2, wherein said second distinct atom is an atom selected from the group consisting of aluminum, antimony, barium, beryllium, boron, bismuth, calcium, gallium, germanium, gold, indium, lead, magnesium, palladium, platinum, silicon, silver, strontium, tantalum, tin, titanium, tungsten, yttrium, zirconium, magnesium, and zinc.

9. The composition as recited in claim 8, wherein said third distinct atom is an atom selected from the group consisting of argon, bromine, carbon, chlorine, fluorine, helium, helium, hydrogen, iodine, krypton, oxygen, neon, nitrogen, phosphorus, sulfur, and xenon.

10. The composition as recited in claim 9, wherein said third distinct atom is an atom selected from the group consisting of oxygen and nitrogen.

11. The composition as recited in claim 10, wherein said third distinct atom is nitrogen.

12. The composition as recited in claim 8, wherein said nanomagnetic particles are represented by the formula $A_xB_yC_z$, wherein A is said first distinct atom, B is said second distinct atom, C is said third distinct atom, and $x + y + z$ is equal to 1.

13. The composition as recited in claim 10, wherein said third distinct atom is an atom selected from the group consisting of oxygen and nitrogen.

14. The composition as recited in claim 13, wherein said third distinct atom is nitrogen.

15. The composition as recited in claim 14, wherein said first distinct atom is iron.

16. The composition as recited in claim 15, wherein said second distinct atom is aluminum.

17. The composition as recited in claim 10, wherein at least about 10 weight percent of said composition is comprised of said nanomagnetic particles.

18. The composition as recited in claim 10, wherein at least about 40 weight percent of said composition is comprised of said nanomagnetic particles.

19. The composition as recited in claim 10, wherein at least about 50 weight percent of said composition is comprised of said nanomagnetic particles.

20. The composition as recited in claim 10, wherein said composition is comprised of a ceramic binder.

21. The composition as recited in claim 20, wherein said ceramic binder is selected from the group consisting of a clay binder, an organic colloidal particle binder, and a molecular organic binder.

22. The composition as recited in claim 20, wherein said binder is a synthetic polymeric binder.

23. The composition as recited in claim 10, wherein said composition is a fluid composition.

24. The composition as recited in claim 10, wherein said composition is disposed within a fiber.

25. The composition as recited in claim 24, wherein said fiber is disposed within a fabric.

26. The composition as recited in claim 12, wherein the ratio of x/y is at least 0.1.

27. The composition as recited in claim 26, wherein the ratio of x/y is at least 0.2.

28. The composition as recited in claim 27, wherein the ratio of z/x is from about 0.001 to about 0.5.

29. The composition as recited in claim 10, wherein said composition is comprised of at least 0.05 weight percent of said nanomagnetic particles.

30. The composition as recited in claim 10, wherein said composition is comprised of at least 5 weight percent of said nanomagnetic particles.

31. The composition as recited in claim 10, wherein said composition consists essentially of said nanomagnetic particles.

32. The composition as recited in claim 10, wherein said nanomagnetic particles have an average particle size of less than about 20 nanometers.

33. The composition as recited in claim 10, wherein said nanomagentic particles have an average particle size of less than about 15 nanometers.

34. The composition as recited in claim 10, wherein said nanomagentic particles have an average particle size of less than about 10 nanometers.

35. The composition as recited in claim 10, wherein said nanomagentic particles have an average particle size of less than about 3 nanometers.

36. The composition as recited in claim 10, wherein said phase transition temperature is less than about 50 degrees Celsius.

37. The composition as recited in claim 10, wherein said phase transition temperature is less than about 46 degrees Celsius.

38. The composition as recited in claim 10, wherein said phase transition temperature is less than about 45 degrees Celsius.

39. The composition as recited in claim 10, wherein said nanomagnetic particles have a saturation magnetization of at least 100 electromagnetic units per cubic centimeter.

40. The composition as recited in claim 10, wherein said nanomagnetic particles have a

saturation magnetization of at least 200 electromagnetic units per cubic centimeter.

41. The composition as recited in claim 10, wherein said nanomagentic particles have a saturation magnetization of at least 1,000 electromagnetic units per cubic centimeter.

42. The composition as recited in claim 10, wherein said composition is comprised of nanomagnetic material with a saturation magnetization of from about 1 to about 36,000 Gauss, a coercive force of from about 0.01 to about 5,000 Oersteds, and a relative magnetic permeability of from about 1 to about 500,000.

43. The composition as recited in claim 42, wherein said nanomagnetic material has a saturation magnetization of from about 200 to about 26,000 Gauss.

44. The composition as recited in claim 42, wherein said nanomagnetic material has a coercive force of from about 0.01 to about 3,000 Oerstends.

45. The composition as recited in claim 42, wherein said nanomagnetic material has a coercive force of from about 0.1 to about 10 Oersteds.

42. The composition as recited in claim 42, wherein said nanomagnetic material has a relative magnetic permeability of from about 1.5 to about 260,000.

43. The composition as recited in claim 42, wherein said nanomagnetic material has a relative magnetic permeability of from about 1.5 to about 2,000.

44. The composition as recited in claim 42, wherein said nanomagnetic material has a mass density of at least 0.001 grams per cubic centimeter

45. The composition as recited in claim 42, wherein said nanomagentic material has a mass density of at least about 1 gram per cubic centimeter.

46. The composition as recited in claim 42, wherein said nanomagnetic material has a mass density of at least about 3 grams per cubic centimeter.

47. The composition as recited in claim 42, wherein said nanomagnetic material has a mass density of at least about 4 grams per cubic centimeter.

48. The composition as recited in claim 42, wherein said nanomagnetic material has a saturation magnetization of from about 500 to about 10,000 Gauss.

49. The composition as recited in claim 10, wherein said composition is comprised of an insulating matrix within which said nanomagnetic particles are disposed.

50. The composition as recited in claim 10, wherein said composition is comprised of cerium oxide.

51. The composition as recited in claim 10, wherein said composition is comprised of calcium oxide.

52. The composition as recited in claim 10, wherein said composition is comprised of silica.

53. The composition as recited in claim 10, wherein said composition is comprised of alumina.

54. The composition as rccited in claim 10, wherein said composition is bonded to a therapeutic agent.

55. The composition as recited in claim 54, wherein said therapeutic agent is an anti-microtubule agent.

56. The composition as recited in claim 55, wherein said anti-microtubule agent is a taxane.

57. The composition as recited in claim 55, wherein said anti-microtubule agent is paclitaxel.

58. The composition as recited in claim 54, wherein said therapeutic agent is disposed on or in a polymeric carrier.

59. The composition as recited in claim 58, wherein said polymeric carrier is biodegradable.

60. The composition as recited in claim 59, wherein said polymeric carrier is a temperature

sensitive polymeric carrier.

61. The composition as recited in claim 59, wherein said polymeric carrier is comprised of a thermogelling polymer.

62. The composition as recited in claim 10, wherein said composition is bound to an affinity recognition molecule.

63. The composition as recited in claim 62, wherein affinity recognition molecule is selected from the group consisting of antibodies, enzymes, specific binding proteins, nucleic acid molecules, receptors, and mixtures thereof.

64. The composition as recited in claim 10, wherein said composition is disposed within a polymeric carrier.

65. The composition as recited in claim 64, wherein said polymeric carrier is comprised of poly(caprolactone).

66. The composition as recited in claim 64, wherein said polymeric carrier is comprised of polylactic acid.

67. The composition as recited in claim 64, wherein said polymeric carrier is comprised of poly (ethylene-vinyl acetate).

68. The composition as recited in claim 64, wherein said polymeric carrier is comprised of an anti-angiogenic factor that inhibits vascular growth.

69. The composition as recited in claim 64, wherein said polymeric carrier is comprised of a polyvinyl aromatic polymer.

70. The composition as recited in claim 69, wherein said polyvinyl aromatic polymer is polyacrylic acid.

71. The composition as recited in claim 64, wherein said polymeric carrier is comprised of

a bioerodible polymer.

72. The composition as recited in claim 10, wherein said composition is comprised of dextran.

73. The composition as recited in claim 10, wherein said composition is comprised of albumen.

74. The composition as recited in claim 10, wherein said composition is comprised of lipid material.

75. The composition as recited in claim 10, wherein said composition is comprised of proteinaceous material.

76. The composition as recited in claim 10, wherein said composition is comprised of a polysaccharide.

77. The composition as recited in claim 10, wherein said composition is comprised of a water-insoluble organic liquid.

78. The composition as recited in claim 10, wherein said composition is comprised of a water-soluble anti-cancer agent.

79. The composition as recited in claim 10, wherein said composition is comprised of a hydrophilic, crystalline carbohydrate.

80. The composition as recited in claim 10, wherein said composition is comprised of nuclide material.

81. The composition as recited in claim 10, wherein said composition is comprised of organic resin binder.

82. The composition as recited in claim 10, wherein said composition is comprised of sublimable dyestuff.

83. The composition as recited in claim 10, wherein said composition is disposed within a tape.

84. The composition as recited in claim 10, wherein said composition is comprised of a

polymerizable ink.

85. The composition as recited in claim 10, wherein said composition is comprised of chromium oxide.

86. The composition as recited in claim 10, wherein said composition is comprised of a water soluble material.

87. The composition as recited in claim 10, wherein said composition is comprised of a colorant.

88. The composition as recited in claim 10, wherein said composition is comprised of liquid crystal material.

89. The composition as recited in claim 10, wherein said composition is comprised of nitrile rubber.

90. The composition as recited in claim 10, wherein said composition is comprised of a glycidyl compound.

91. The composition as recited in claim 10, wherein said composition is comprised of a polyurethane.

92. The composition as recited in claim 10, wherein said composition is comprised of an electronic conductive polymer.

93. The composition as recited in claim 10, wherein said composition is comprised of an oligonucleotide.

94. The composition as recited in claim 10, wherein said composition is comprised of a ferrofluid.